

## **REMARKS**

Please reconsider the application in view of the following remarks. Applicant thanks the Examiner for carefully considering this application.

### **I. Disposition of Claims**

Claims 1-15 are pending in this application. Claims 1, 10, 13, and 15 are independent. The remaining claims depend, directly or indirectly, from claims 1, 10, and 13.

### **II. Rejection(s) under 35 U.S.C § 103**

Claims 1-4, 6-10, and 13-15 were rejected under 35 U.S.C. § 102(a) as being obvious over U.S. Patent No. 6,450,271 issued to Tibbitts, *et al.* (hereinafter “Tibbitts”) in view of U.S. Patent No. 6,206,115 issued to Overstreet, *et al.* (hereinafter “Overstreet”). This rejection is respectfully traversed.

Claims 1, 10, 13, and 15 all include limitations of at least one predominantly steel cutting element, which is insertable into a drill bit, and depositing hardfacing on the cutting element prior to attaching the cutting element to the drill bit.

Tibbitts discloses cutting elements, both inserts and integrally formed teeth, having a coating that provides low adhesion and a smooth surface. This coating may include nonmetallic or metallic coatings so as to reduce bit balling, frictional forces, and erosion on the surface of the bit.

Overstreet discloses a mill tooth bit that includes a plurality of teeth. The teeth include a steel stub integrally formed with the bit's cutter, a carburized layer upon the

steel stubs and a coating of hardfacing thereupon.

The Applicant respectfully notes that a determination of obviousness under 35 U.S.C. § 103 requires that the Examiner consider four factual inquiries, which include: (1) the scope and contents of the prior art; (2) the differences between the prior art and the claimed invention; (3) the level of ordinary skill in the art; and (4) evidence of secondary considerations indicating nonobviousness. *Graham v. John Deere Co.*, 383 U.S. 1, 17-18 (1966). In order to establish a *prima facie* case of obviousness, there must be a suggestion or motivation to combine the referenced teachings and a reasonable expectation of success *In re Vaeck*, 947 F.2d 488, 493 (Fed. Cir. 1991). "The mere fact that the prior art can be modified in the manner suggested by the Examiner does not make the modification obvious unless the prior art suggested the desirability of the modification." *In re Fritch*, 972 F.2d 1260, 1266 (Fed. Cir. 1992). Furthermore, a prior art reference must be considered in its entirety, including portions that would lead away from the claimed invention. *W.L. Gore & Associates, Inc. v. Garlock, Inc.*, 721 F.2d 1540, 1550 (Fed. Cir. 1983).

In the present case, neither Overstreet nor Tibbitts impliedly or expressly provide a motivation to combine their respective teachings to achieve the claimed invention. As noted above, Overstreet is directed solely to the use of milled teeth. The fact that Tibbitts discloses both insert-type cutting elements and milled teeth does not make the two interchangeable, to those having ordinary skill in the art. This point is supported by the attached declaration of James Minikus, which notes that, when designing and/or manufacturing drill bits, those of ordinary skill typically select from either insert-type cutting elements or a milled tooth bit, depending on the application.

Furthermore, the combination of Tibbitts and Overstreet does not suggest the deposition of a hardfacing on a predominantly steel cutting element prior to the attachment of the predominantly steel cutting element to the cutter. Both Tibbitts and Overstreet deposit a hardfacing layer to the predominantly steel cutting element when the cutting element is attached to the drill bit. Thus, both Tibbitts and Overstreet teach away from the method of the present application.

The attached declaration of James Minikus notes the difficulty in uniformly welding hardfacing on a milled cone. This difficulty results in non-uniform thicknesses of hardfacing and thermally damaged tungsten carbide, which in effect limits the amount of tungsten carbide in the hardfacing. In contrast, the present inventor has advantageously discovered that by providing hardfacing to a predominantly steel cutting element when it is not attached to the drill bit, thickness of the layer can be controlled and optimized.

Tibbitts and Overstreet, when viewed as a whole, make no suggestion to modify the Tibbitts cutters to form the cutter of the present application. The benefits and control of forming a pre-formed steel tooth bit that is deposited with a hardfacing layer prior to being attached to a drill bit are not taught in either Tibbitts or Overstreet, as declared by James Minikus. Nor are these benefits apparent to one of ordinary skill in the art. Thus, the Applicant respectfully asserts that the Examiner has not met his burden of establishing any motivation or suggestion to combine Tibbitts and Overstreet or that such combination would even suggest a preformed cutting element made predominantly of steel, where the predominantly steel cutting element was deposited with hardfacing prior to being attached to a drill bit.

Because Tibbitts in view of Overstreet fails to teach, suggest or motivate the claimed invention as recited in claims 1, 10, 13, and 15, claims 1, 10, 13, and 15 are patentable over Tibbitts in view of Overstreet. Claims 2-9, 11, 12, and 14, being dependent, are also patentable for at least the same reasons. Accordingly, withdrawal of this rejection is respectfully requested.

Claims 5, 11, and 12 were also rejected under 35 U.S.C. § 103(a) as being obvious over Tibbitts in view of U.S. Patent No. 4,940,099 issued to Deane *et al.* (hereinafter "Deane").

As discussed above, Tibbitts fails to teach a predominantly steel cutting element having a hardfacing layer, which includes hardmetal coating, deposited prior to the predominantly steel cutting element being attached to the surface of a cone. Deane fails to provide that which Tibbitts lacks.

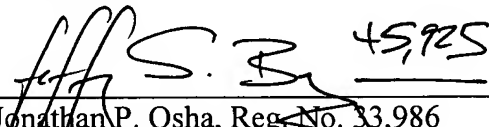
Deane also teaches tungsten carbide inserts having a hardfacing layer, but is completely silent to predominantly steel cutting elements including a hardmetal coating. Because Deane fails to provide that which Tibbitts lacks, claims 1, 10, 13, and 15 are patentable over Tibbitts and Deane, whether considered separately or in combination. Claims 5, 11, and 12, being dependent, are likewise patentable for at least the same reasons. Accordingly, withdrawal of this rejection is respectfully requested.

## V. Conclusion

Applicant believes this reply is fully responsive to all outstanding issues and places this application in condition for allowance. If this belief is incorrect, or other issues arise, the Examiner is encouraged to contact the undersigned or his associates at the telephone number listed below. Please apply any charges not covered, or any credits, to Deposit Account 50-0591 (Reference Number 05516.142002).

Respectfully submitted,

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